

## WORKSHOP SUMMARY - KEY POINTS

The staff held public workshops on November 19, 2003, and January 14, 2004, to discuss and solicit comments on the staff's initial efforts to develop functional performance requirements and criteria for the containment design of new non-light water reactors (LWRs).

The scope of the workshops addressed options and issues for developing criteria to address the following potential containment functional areas:

- (1) Containing fission products
- (2) Preventing and mitigating severe core damage accidents
- (3) Removing heat during accidents
- (4) Protecting safety equipment from natural phenomena, and dynamic effects
- (5) Protecting onsite workers from radiation
- (6) Physically protecting vital equipment (security events)

Key points raised by stakeholders at the workshops are summarized below.

### Potential Containment Functional Performance Areas

- Workshop participants stated that there needed to be a clarification of reactor safety functions, containment safety functions, and where the two overlap.
- NRC should look at how to apply these safety functions to radiation outside of the core.
- Specific aspects of the containment building can only be addressed in the consideration of a specific technology and design, and generic requirements are not very practical at a low level.
- NRC should make functional performance requirements technology-neutral (within the non-LWR arena), but functional performance criteria should be done on a design-specific basis, and for now, the NRC should focus on high-temperature, gas-cooled reactors (HTGRs) in developing functional performance criteria.
- Functional performance areas 1 and 2 should be combined and modified so to "manage the release of fission products during accidents."
- Many of the functional performance areas are not exclusive functions of the containment and can be accomplished by other systems.
- "Containment" should refer to a structure and "containment building" and "reactor building" can be used interchangeably; i.e., the use of the word "containment" does not necessarily imply a building with pressure-retaining capability.

### Contain Fission Products

- This functional area should be combined with the “Prevent and Mitigate Severe Core Damage Accidents” area, with some changes to the wording.
- NRC should not require a containment building to be pressure-retaining, or to have the capability to filter fission products. The regulations should focus on what dose acceptance criteria need to be met outside of the reactor/ containment building.
- NRC should give credit to design features that enhance operator recovery.
- Functional performance requirements need to account for the role of time in assessing functional performance requirements, and consider time available for taking mitigative actions.
- Stakeholders encouraged the NRC to understand the design philosophy of the new reactors and to take that (along with how to deal with very low core damage frequency) into consideration in determining the functional performance requirements.

### Prevent and Mitigate Severe Core Damage Accidents

- NRC should allow the designers to have flexibility in dealing with uncertainties, and should not assume that the prevention of severe core damage (however it is defined) is a function of the containment building.
- If there is reasonable assurance of fuel quality, is a containment building a necessary element of defense-in-depth? Is a containment building with the capability to be pressure-retaining necessary just in case the fuel integrity is not as good as it was thought to be?
- There is no clear separation between prevention and mitigation. New reactor designs are not relying on just one thing to prevent accidents.
- NRC should focus on putting requirements on the conditions of an area immediately outside of the containment (or reactor) building, and not look at how those conditions are achieved. NRC should establish basic dose criteria that need to be met under accident conditions while allowing the designer flexibility in how to meet that criteria.
- In accounting for completeness uncertainties, the impacts on the integrated cost of the plant need to be considered.

### Remove Heat During Accidents

- This function should not be assigned to the containment building as heat removal can be accomplished with other systems.
- Clarify whether this function is necessary for maintaining structural integrity of the containment building or whether it is important for the retention of fission products in the fuel.
- How much redundancy and diversity should be required for passive components?
- The reactor/containment building, no matter what it looks like, must accommodate and not interfere with heat removal and recovery actions for the purposes of maintaining fuel integrity, terminating fuel damage if such damage is underway, ensuring building and structural integrity, and facilitating recovery actions after an accident.

### Protect Safety Equipment From Natural Phenomena and Dynamic Effects

- Stakeholders said they would prefer that this requirement not be assigned specifically to containment. The NRC should only require that provisions are provided within the systems structures, and components to protect against the adverse effects of natural phenomena.

### Protect Onsite Workers from Radiation

- There need not be additional regulations for worker protection under accident conditions as the existing regulations are adequate. New plants should use something similar to the NEI Severe Accident Management Guidelines (SAMGs).
- This functional performance requirement should require the reactor (or containment) building to accommodate and not to interfere with recovery actions.

### Physically Protect Vital Equipment (Security Events)

This topic was not discussed at the workshops.